Part III
Model Transformation Based on Triple Graph Grammars
This third part presents model transformation, model integration and model synchronisation based on triple graph grammars. Following up on the informal introduction to model transformation in Chap. 3 of Part I, we present the formal theory of graph transformation based on triple graph grammars. In Chap. 7, we give the foundations of triple graph grammars leading to model transformation and model integration. It is important to note that transformation and integration are based on operational rules, which can be generated automatically from the triple graph grammar rules. A flattening construction allows us to show the equivalence of model transformations based on triple graph grammars and plain graph grammars. In Chap. 8, we present several analysis techniques for model transformations, which are supported by tools discussed in Part IV. Important properties, which are analysed in Chap. 8, include correctness and completeness, functional behaviour and information preservation, as well as conflict resolution and optimisation. In Chap. 9, model transformation techniques are applied to model synchronisation, which is an important technique for gaining and keeping consistency of source and target models after changing one or both of them. This leads to unidirectional and concurrent model synchronisation, respectively.